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Daylighting Equity: Evaluating Efforts to Daylight Lower-income and Minority Areas in El Cerrito, California

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Daylighting Equity: Evaluating Efforts to Daylight Lower-income and Minority Areas in El Cerrito, California

by

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Dedication

To the ones I love the most, thank you for your support and prayers.

Acknowledgements

I would first like to thank my professional report advisors, Dr. Robert Paterson and Dr. Katherine Lieberknecht of the Community and Reginal Planning Department at the University of Texas in Austin. I am grateful for their participation and input during the completion of this project. I would also like to thank God for giving me the strength to persevere through my time in graduate school. I must also express my very profound gratitude to my family for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this report. This accomplishment would not have been possible without them.

Thank you.

Abstract

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The University of Texas at Austin, 2018

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In recent years there has been a push to bring nature and its benefits back into the built environment. Urbanized areas are seeing the revitalization and restoration of once buried urban waterways. This growing trend is known as daylighting and has become an increasingly popular method of bringing nature back to the city. Although nature is making its way back into the built environment, the benefits of nature have been excluded from low-income and minority communities. Park space for the lower income residents has been an issue in the environmental justice arena for years, and in these low-income areas, the lack of green space for the city's most vulnerable is a problem that has yet to be solved. This report examines urban green planning, daylighting specifically in the City of El Cerrito, California to explore whether daylighting projects present EJ concerns in a California community and the use of analysis tools under the National Environmental Policy Act (NEPA) to explore social justice issues. The PR draws on the California Department of Transportation (CalTrans) desk guide for EJ analysis under NEPA and CEQA (California Environmental Quality Act). That adopts the same definition and criteria of evaluation as NEPA. Smaller regional planning organizations also use this method. Using this evaluation process, I located communities of concern at the census tract and block group level in areas that were not located near daylighting

projects in the City of El Cerrito. Although NEPA is primarily used for highway and transportation projects, this report demonstrates the potential of NEPA EJ tools to examine social justice issues for green amenity planning.

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Chapter 1 Back to Nature

For many years, the push for a car-dependent environment has fueled development patterns that paved over prairies, fragmented woodlands and buried streams, this has been particularly true in lower-income areas. Ever since WWI, densely populated urban cores have slowly begun to lose natural area, these areas have now become concrete and asphalt. In recent years, projects such as The Highline in New York City, The Cheonggyecheon in Seoul and Klyde Warren Park in Dallas have inspired cities to reclaim urban green space (Greene, 2018). Many cities are now looking to their buried urban creeks as a way to restore damaged ecosystems and reconnect the public with creeks and rivers through the daylighting process (American Rivers, n.d.). The act of daylighting or creek restoration is the revitalization of streams by uncovering some or all of a previously covered river, stream, or stormwater drainage, and is a relatively new tool within the planning and landscape architecture fields (American Rivers, n.d.). Examples of daylighting can be seen across the North America in states such as California, New York, Texas and around the world in countries such as South Korea and New Zealand.

The addition of green space from these projects has been shown to be valuable to cities by decreasing the amount of air pollutants and bringing a diverse ecology of plants and animals into the cityscape. Daylighting allows a city to reduce its' frequency of devastating floods due to changes in the hydrology of the landscape, increase the number of beneficial insects and animals that help maintain the environment and most importantly breathe new life into an area that has been paved over by bringing people and nature together. These ideas make living in urban environments easier and should be enjoyed by everyone. In addition to the benefits of having green space cities are faced with planning dilemmas when it comes to the placement of green amenities.

There is a substantial legacy of unequal provisions of public services such as parks in low-income and minority communities in the U.S. Studies from all over the

world have shown that minorities and low-income people experience a greater disproportion of green space (Boone, Buckley, Grove & Sister, 2009**)**. This disproportion in green space access in the urban environment is considered an environmental justice issue and according to the Environmental Protection Agency (EPA) environmental justice (EJ) is "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies" (EPA). For this master report I have chosen to look into the potential inequities in the planning and practice of daylighting in a single case study community. I selected a single community from the San Francisco area to explain (a) whether daylighting projects neglect low-income or minority communities, and (b) to demonstrate the possible utility of using common NEPA EJ tools as a method to evaluate possible EJ concerns in daylighting.

This inquiry into daylighting practices focuses on a case study review of daylighting efforts in the city of El Cerrito. El Cerrito is located in the Bay Area of California between the city of Richmond and the city of Albany. The city set the precedent for daylighting by deculverting its first creek in 1996 (El Cerrito, 2015). El Cerrito then planned and daylit many creeks following that first effort, making the city a prime choice for case study review (El Cerrito, 2015).

This case study will first discuss the of EJ and the issue of green amenity access concerns found in literature to provide a foundation of knowledge for continued exploration into the research questions. The literature review will be followed by a brief description of the methodology used to collect information and analyze whether most daylighting projects are done in affluent areas of town or not. The report concludes with observations on the method used and possible uses of the method as well as future research needs.

This research topic is important because daylighting can allow a city to reduce its frequency of floods due to hydrology changes of the landscape, increase the number of

beneficial insects and animals that help maintain the environment and most importantly breathe new life into areas that paved over bringing people and nature together.

Chapter 2 Literature Review

As urban green amenities become a new trend among the green infrastructure world, scholars and advocates have turned their attention to the growing inequities between public and open green spaces and disadvantaged communities (Foster, Lowe, & Winkelman, 2011). This section draws on the academic and professional literature to provide a context to the importance of creek restoration or daylighting projects for low-income and/or minority communities. The chapter begins with a brief review of the environmental movement and environmental justice concepts that have helped shape the current arguments that address the unfair distribution of parks, creeks and other green amenities. The section is followed by a brief review of the mental and physical health effects of not having access to green amenities. In addition, the chapter reviews past efforts to make urban green amenities a permanent fixture in the urban environment. The chapter concludes by describing the current trend of daylighting urban creeks.

HOW DAYLIGHTING HELPS COMMUNITIES

Green spaces can range from parks, reserves, activity fields, green walkways and trails, community gardens, green walls and even creeks or rivers (Roy, Byrne, & Pickering, 2012). According to the "Rivers for America" daylighting is the revitalization of streams by uncovering some or all of a previously covered river, stream, or stormwater drainage (American Rivers, nd). Human settlements have almost always located near bodies of water. This can be seen in many of the first expedition crews that explored the Americas. In the 1900's, many urban streams were exposed on the surface, but these streams experienced increased and unexpected flooding that caused damage to homes, business and even claimed the lives of many settlers (American Rivers, nd). Urban stream beds and river beds were an excellent place for cities to discard their sewage. Many older photos show discharge pipes that discharge sewage into the stream. Coupled with the frequent flooding, activity urban streams were responsible for deadly disease

outbreaks such as cholera that devastated cities (American Rivers, nd). On top of these issues, streams were often buried to provide buildable land for the city's growth.

As previously mentioned, urban landscapes were filled with creeks and other bodies of water. The following projects illustrate the decline of the urban creek in cities and the restoration they can provide if maintained. The most recent noteworthy daylighting project in the world is the Cheonggyecheon in South Korea. The Cheonggyecheon had a long history of flooding, which led to dredging, straightening and many other river taming techniques. However, in the early 20th century, the river corridor experienced a high influx of poor migrants and rapid growth. These migrants lived near the river, and over time it became overrun with trash and sewage. In the 1950's, the decision was made to cover the river with a six-lane highway (Wang, 2014).

After the Cheonggyecheon was daylit, it restored native willow swamps, shallows and marshes that have been created in 29 locations along the daylighted portion that created habitat. Studies of the Cheonggyecheon have reported that the river has provided a level of protection from flooding in the summer months. There has also been increased biodiversity with plant species returning from only 62 to 308; fish from 4 to 25; birds 6 to 36; and other aquatic life from 5 to 53 (Thomas, 2001). The study has also found that the river alleviates the urban heat island lowering the temperature by 3.3 to 5.9 degrees Farenheit that can be felt 4-7 blocks away. There are even reports that air pollution has been reduced by 37% (Landscape Architecture Foundation, n.d.).

UNHEALTHY CITIES

In addition, many articles discuss the health problems that are associated with a lack of green space, a lack of participation and gentrification of communities that are changing and amplifying disparities in access to green spaces in communities that are considered environmental justice comminutes (Boone, Buckly, Grove, & Sister, 2009). Research has shown that obesity has become a growing problem in the United States, and a mountain of news articles and studies have substantiated this claim. Food choices and a

lack of physical activity are among the most significant factors that have been linked to obesity (Miller, 2015). Many studies concerning obesity and physical activity have correlated the lack of park access and an increased mortality rate (Coutts, Horner, & Chapin, 2010). Open rivers and streams with their associated green space offer easily accessible linear corridors for trails, parks and nature.

EQUITY IN GREEN SPACES

The green space movement can be traced back to 1800 when Frederick Law Olmstead advocated for the creation of Central Park in New York City, New York (Boone, Buckly, Grove, & Sister, 2009). Olmstead demonstrated that revenue generated from the surrounding properties would offset the cost of building the park. Since the Green movement, it has been well documented that green spaces provide many benefits to the public health of cities. These benefits include but are not limited to removing pollutants in the air, controlling noise pollution and controlling inner city temperatures (Wolch, Byrne, & Newell, 2014). Urban green spaces also benefit the people who live near them. It provides opportunities to interact socially with one another, strengthen community and social ties and provide a sense of greater security (Boone, Buckly, Grove, & Sister, 2009). These benefits are also well known to planners of park and open spaces and are often used as a rationale for the creation and maintenance of new and existing parks (Boone, Buckly, Grove, & Sister, 2009). The benefits of green spaces are also used to swing votes during bond elections. Organizations such as Trust for Public Land has helped pass 571 ballot measures with 81 percent success (Trust for Public Land, nd.). According to Landvote.org since 2010 California has helped put 26 ballot measures to a vote with a 65 percent success. With the creation of green amenities, land values near the areas experiences an increase in value (Wolch, Byrne, & Newell, 2014). This green gentrification contributes to the growing disproportionate distribution of green spaces in the urban setting. The green space movement has always faced challenges, but when green space issues are recognized and achieved they often reflect the motives and

decisions of privileged groups (Miller, 2015). Green space and park access can be a complex issue. For example, a study in Baltimore, Maryland found that African Americans and other minority groups had better walking access to green spaces but also had access to fewer parks per capita (Boone, Buckly, Grove, & Sister, 2009). Another study in Gowanda, New York found that sometimes green amenities are not wanted. The study found that some residents thought that adding a green amenity would cause them to lose their home due to rising prices; others felt that their wants and imputes were not taken seriously (Miller, 2015).

ENVIRONMENTAL JUSTICE: NATURE FOR ALL

Environmental justice (EJ) has been a topic of many academic articles for about twenty years and is a global concern (Pulido, 2010). Environmental justice traces its roots to both the conservation movement and the environmental health movement. The conservation movement is defined as the preservation, protection, or restoration of the natural environment, natural ecosystems, vegetation, and wildlife (Bates, 1957). As cities became more crowded and dense people, began to appreciate the wilderness and open space. This appreciation drove people to pursue conservation of the pristine natural environment. During the progressive era, preservation and conservation efforts became very popular. President Theodore Roosevelt was known for protecting approximately 230 million acres of public lands (National Park Services, n.d). The modern environmental health movement began as a fight for cleaner water and air as the population continued to grow. In the city of Chicago working class people were subject to living near slaughterhouses, tanneries and other environmental offences that poisoned the air and water (Advameg, Inc., 2018). The Environmental Justice movement built on the conservation and environmental health movements by adding the question of conservation and health for whom? It challenged both the burdens and benefits as being shared by all: it demonstrated the burdens were unfairly carried by low-income and minority communities while the benefits disproportionately favored the affluent and

white (Bullard, 1994). Environmental justice is defined by the Environmental Protection Agency (EPA) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies (EPA, n.d.).

The defining watershed event in Environmental Justice in the U.S took place in September of 1982 in Warren County, North Carolina. An African American community living in Warren County protested the building of a landfill that would allow the disposal of polychlorinated biphenyl (Office of Legacy Management, n.d.). The community battle was ultimately lost, and the landfill was built (but later was cleaned up under Superfund) but what the protest did accomplish was a cry for justice: the event sparked EJ movements across the county. Shortly after the Warren County loss a study was conducted by the U.S. General Accounting Office. It found that in addition to Warren County four other major landfill sites had been built in majority African American communities (Office of Legacy Management, n.d.). Although environmental justice advocates fought to change decisions to place garbage dumps, toxic waste sites and other hazardous facilities in neighborhoods where majority poor and non-white people lived, little has been advocated for a better greener urban environment in these same neighborhoods (Purdy, 2016).

Over the years EJ and environmentalism issues have grown and intertwined to include more than protected class of race and color, issues concerning land conservation, clean air and water to an urban movement that include a more holistic social and equitable access to green amenities. In the following chapter, I discuss the methods used to explore whether daylighting projects presents EJ concerns in a California Community.

Chapter 3 Methodology

This professional report answers the following questions: are daylighting projects in El Cerrito, California predominantly done in affluent or non-minority areas of town? And, demonstrate an application of an EJ analysis tool that can be used by cities to explore social justice issues. The research methods used to answer the questions include a two-part strategy. First, the report briefly summarizes the planning documents, secondary uses. U.S Census Bureau Decennial Survey and American Community Survey will be used to identify areas within El Cerrito that have a measurable concentration of minority or low-income communities. Secondly, CalTrans Environmental Justice Guide Book method was used to determine if there is an environmental justice concern for where creek restoration projects are planned.

LOCAL DAYLIGHTING INVESTIGATION

Daylighting is a relatively new trend in environmental restoration, thus the question of whether it too suffers from a lack of equity focus is also appropriate. After reviewing of the daylighting literature, I settled on the City of El Cerrito for study because of its commitment to Greening and several successful projects. Content analysis of primary data such as the 1999 General Plan and the 2015 Urban Greening Plan revealed city greening priorities as well as existing daylit creeks locations. Secondary data provided an overview of the project details and community attitudes and consisted of newspapers articles, meeting minutes from task force groups and other media documents that can provide insight into planning decisions. The U.S Census Bureau allows the download of both census tracts and block groups within the United States. Census tracts which are similar to neighborhood districts within a city were used for initial review to analyze a population demographic information within the city. Further review was then done at the block group level which are the next step down in geographic area to allow for the same demographic information to be reviewed but at a finer scale. Looking at both

the census tract level and the block groups levels allows for a more detailed review. Possible communities of concern (low-income and/or minority concentrated locations).

FEDERAL AND REGIONAL ASSESSMENT OF ENVIRONMENTAL JUSTICE

The National Environmental Policy Act (NEPA) is the nation's core environmental statute that requires federal agencies to evaluate the environmental impacts of major federal actions (ICF Consulting, 2003). The NEPA process evaluates and documents the possible relationship between major federal actions and its impact on the environment and society. NEPA also requires public involvement and community outreach accompany the documentation process (ICF Consulting, 2003). The Council on Environmental Quality (CEQ) provides guidance for implementing environmental justice under NEPA. First analysis must identify where communities of concern exist based on accepted thresholds such as:

- Low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty (ICF Consulting, 2003).
- Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (ICF Consulting, 2003). Minority individuals are defined as members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black; or Hispanic.

Similar to the CEQ approach above, the California Department of Transportation (CalTrans, nd) developed a desk guide for address environmental justice in transportation planning and improvements. This guide adopts the same definition and criteria of evaluation as NEPA. Chapter 4 of the desk guide specificity speaks to the definitions and criteria for determining possible presence of environmental justice communities. The

criteria laid out by both NEPA and CalTrans are often used by Metropolitan Planning Organization and Regional Transportation Planning Agencies for EJ analysis of highway and transportation projects. For example, the Metropolitan Transportation Commission (MTC) which services the bay area identifies “communities of concern,” or zones with higher populations of minorities and/or low-income residents. MTC defined a minority population as one where 70 percent of the population were minorities. The standard definition of low-income populations was also changed to reflect local circumstances of higher cost of living. Thirty percent of the population should be below twice the federally defined poverty level to be considered low-income communities (ICF Consulting, 2003). This report uses the MCT determined thresholds to identify EJ communities of concern at the census tract and block group levels as the first step of the analysis. This followed by analysis of where daylight projects were planned and completed to determine if projects disproportionately benefit more affluent and white portions of El Cerrito.

Chapter 4 Analysis

This chapter begins with some background information on the City of El Cerrito and the plans that catalyzed the daylighting projects. It then reviews the daylighting projects that have been completed to date in the city. These sections are followed by the findings from the MTC analysis done on the census tracts and block groups in El Cerrito. It concludes with a discussion of the key findings, recommendations for future evaluation of environmental justice issues or socioeconomic constraints when planning any future daylighting projects, and finally suggestions for future research into interrelated issues that may arise when daylighting.

BACKGROUND: THE CITY OF EL CERRITO AND PLANS THAT RELATE TO DAYLIGHTING PROJECTS

El Cerrito has many creeks that flow above ground and underground. This has made creek preservation efforts (identified in the 2015 Urban Greening Plan) a high priority and an asset for the city. The city prides itself on having stable residential neighborhoods, excellent transit, highway access, high-quality parks and recreational facilities (El Cerrito, 2015). In the General Plan, city officials identified urban greening and preservation as an essential part of moving the city forward (El Cerrito, 1999). Since the General Plan, the city has developed and maintained many parks which include both recreation and sports parks such as Poinsett Park, Cerrito Vista Park as well as undeveloped nature areas such as the Hillside Natural Area. One of El Cerrito's most popular areas is the 2.6-mile segment of the Ohlone Greenway which was named after the Native American Ohlone people, a trail that runs the length of the City alongside a former railroad grade underneath the Bay Area Rapid Transit (BART) right-of-way.

El Cerrito currently has three plans that addressed the importance of urban green amenities the General Plan, the Urban Greening Plan and the Ohlone Greenway Master plan. El Cerrito's General Plan prioritizes the preservation and enhancement of natural features throughout the city (El Cerrito, 1999).

Chapter 6 of the General Plan talks about parks, recreation and open space, specifically setting policies that encourage sustainable development, creek restoration and creating an open spaces map to help identify and maintain existing open spaces (El Cerrito, 1999). The General Plan identified 379 acres within El Cerrito used for recreational and open space purposes, some of which has been identified as opportunities for creek restoration (El Cerrito, 2015).

Initial creek restoration, enhancement and preservation themes that are found in the General Plan are revisited in the Urban Greening and Ohlone Greenway Plans. In 2013 the city began its efforts to create its first 2015 Urban Greening Plan that addressed many different aspects of city greening including daylighting in El Cerrito. The city had an impressive turnout in the summer and fall of 2013 community meetings and was able to include concerns of daylighting into the plan (El Cerrito, 2015). Goal and objectives identified in the Urban Greening Plan of enhancing the creek system in El Cerrito; specifically, objective eight titled enhanced creeks speak to the seriousness for increasing daylighting practices. The Urban Greening Plan identifies additional segments for creek restoration or daylighting across the city.

The Ohlone Greenway Master Plan specifically addresses the Ohlone Greenway and identifies creek sections along the greenway that have been daylit or are candidates for daylighting. This plan addresses four sections of an unnamed creek that runs along the Ohlone Greenway that have been daylit (El Cerrito, 2009).

This conscious and unified planning effort has allowed El Cerrito to continue to purse daylighting and creek restoration throughout the city. The city, to date, has completed four three daylighting projects: Baxter Creek, Cerrito Creek and segments along the Ohlone Greenway. This section provides background on each one.

Baxter Creek at Poinsett Park

Baxter Creek can be seen flowing through Poinsett Park in census tract 3840 located in Northern El Cerrito (See Appendix A). The daylighting of Baxter Creek was

completed in 1996 after a culvert failure prompted the city to consider alternative options for the piped creek (Pinkham, 2000). After the city successfully passed a bond in 1990 (with the help of the Urban Creeks Council), El Cerrito was awarded an undisclosed grant to daylight 25 feet of Baxter Creek to its original state (Pinkham, 2000). The area surrounding Poinsett Park is designated in the El Cerrito General Plan as a low development area and is zoned for single-family housing.

Ohlone Greenway four crossings and between Portola Dr. and Schmidt Lane

A small creek given the name Fluvius Innominatus (meaning: un-named) flows through census tracts 3860, 3870, 3880 and 3891 from Arlington Park in the El Cerrito Hills, which once channeled into a storm drain next to the Ohlone Greenway (Friends of 5 creeks, n.d). In 1996, the small creek was daylit due to a pipe failure by the city of El Cerrito. The daylit segment of the creek flowed a blocks-length north to south in a channel that flows from Portola street to Schmidt street (Friends of 5 creeks, n.d). Other sections of the Ohlone Greenway have been identified for creek restoration efforts in the 2015 Urban Greening Plan. The Ohlone Greenway is a city green amenity that runs the length of the El Cerrito along San Pablo Ave, El Cerrito's major arterials. Land use to the east of the Ohlone Greenway are primarily low density and consist of single-family homes. Other uses in the area include medium density and commercial zones (El Cerrito, n.d).

Cerrito Creek at Cerrito Plaza

Cerrito Creek was initially daylit in 2004 between Cornell and Kains Street near the south end of Cerrito Plaza after obtaining a state grant (El Cerrito, 2015). An additional section completed in 2016 is the most recent daylighting and is in the final stages of along the new development Creekside Walk which is a 128-unit rental project, including 19 affordable units, adjacent to the creek (Radin, 2016). The daylit portion of the creek support a native riparian corridor, provide wildlife habitat, and stabilize the creek banks and spans 60 feet (Radin, 2016). This daylighting project is located in the

South-West section of El Cerrito. Additional areas of the Cerrito Creek to the west, between Talbot and Cornell avenues, remains in a culvert, and the segment between Kains and San Pablo avenues are also culverted (Radin, 2016). The City of El Cerrito has identified the entire Cerrito Creek system as having the potential to be daylit (El Cerrito, n.d). Cerrito Creek at Cerrito Plaza is zoned as a commercial and transit-oriented mixed-use district zone. Cerrito Plaza is the defining development and feature in the area and is a major hub for the city (El Cerrito, 1999).

ENVIRONMENTAL JUSTICE ANALYSIS

This section uses the Metropolitan Transportation Commission (MTC) method to explore whether there are any environmental justice concerns as it relates to the location and effects of daylighting. This section begins with a review of the demographic information for the city as a whole as it relates to minorities and income. The Metropolitan Transportation Commission method of evaluation can be used to identify communities of concern in El Cerrito. Although this method is often used to address highway transit projects, such as new highways or expansions under the National Environmental Policy Act (NEPA) (e.g., in Environmental Assessments and Environmental Impact Statements), it can also be used to explore proximity impacts of other major infrastructure projects. Evaluation of the four census tracts that have completed daylighting projects using the MTC environmental justice triggers as seen in (Figure 2) initially reveals that one of the four projects contains a completed daylighting project can be considered serving a community of concern. However, upon a closer look at the block groups in the census tract only one MTC metric is met. Census data shows that at least 30% of the population was under 2.00 ratio of income to poverty level, but only 67% of the people in block group 2 fell under the minority population status. To date daylighting projects have taken place in four different census tracts across El Cerrito.

Today, El Cerrito has a population of 23,549 residents that live within the city's limits (Table 4.2). According to the 2010 Decennial Census, El Cerrito minority

population only makes up 42.1% of the population. In 1990 the population stood at 22,869 residents. The total percentage of minorities living in El Cerrito was 38.3% (Table 4.1)

Table 4.1. Total Population in El Cerrito CA by race in 1990

Demographic groups	Population	Population percent
White	14,094	61.6%
Black	2,055	9.0%
American Indian, Eskimo, or Aleut	76	0.3%
Asian, Native Hawaiian, Pacific Islander	5,079	22.2%
Two or More Races	47	0.2%
Hispanic	1,518	6.6%
Total Population:		**22,869**

Table 4.1 Total population in El Cerrito as of 1990 Decennial Census, Social Explorer Tables (SE), Census 2000, U.S. Census Bureau and Social Explorer

Table 4.2. Total population in El Cerrito CA by race in 2010

Demographic groups	Population	Population percent
White	11,364	48.3%
Black	1,773	7.5%
Hispanic	2,621	11.1%
American Indian and Alaska Native	66	0.3%
Asian, Native Hawaiian, Pacific Islander	6,425	27%
Two or More Races	1,300	6%
Total Population:		**23549**

Table 4.2 Total population in El Cerrito as of 2010 Decennial Census, Social Explorer Tables (SE), Census 2000, U.S. Census Bureau and Social Explorer

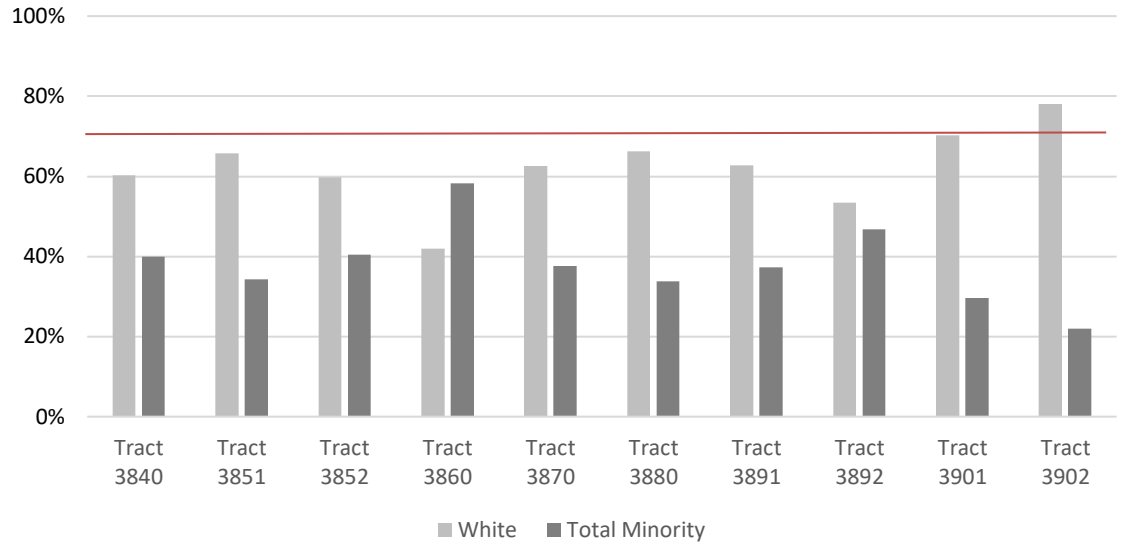
Minority Data Analysis

Census data was pulled from information that reflected conditions before daylighting projects were completed. This was done to limit any interference from post-project demographic changes due to neighborhood turnover.

To begin the EJ analysis census tracts and block groups with communities of concern were identified. Data from the 1990 survey shows that only two tracts, 3860 and 3892 meet the over 70 percent qualifier for a community of concern (Figure 4.1). Data

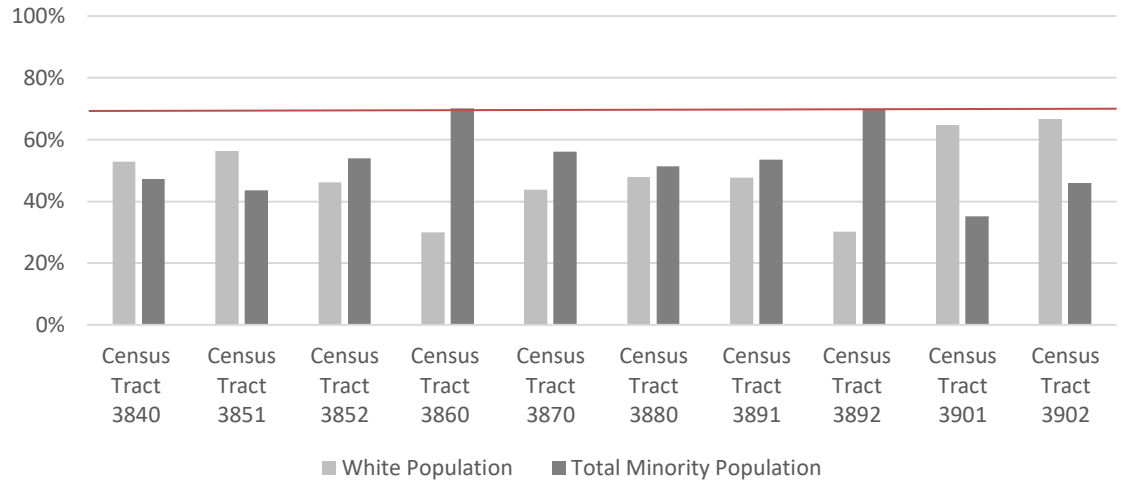
from 2010 reflects the same data as in 1990, in that census tracts 3860 and 3892 both qualified as communities of concern (Figure 4.2). Further analysis of the block groups shows that in 1990 block groups 1 and 4 in census tract 3860 and block group 1 in census tract 3892 both qualified as communities of concern (Figure 4.3). Two thousand ten survey data showed the bock groups 3 and 4 in census tract 3860, block group 3 in census tract 3870 and block groups 1 and 2 in census tract 3892 qualified as communities of concern (Figure 4.4).

Figure 4.1. Minority vs. non-minority population in El Cerrito CA- Census tract 1990



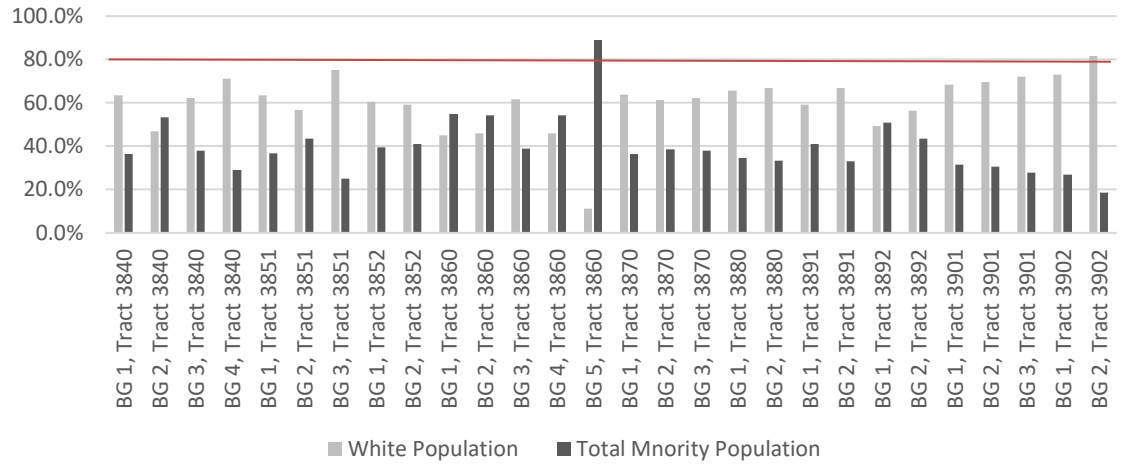
City wide comparison of the white population to the minority population in 1990. Social Explorer Dataset (SE), Census 1990, Social Explorer; U.S. Census Bureau

Figure 4.2. Minority vs. non-minority population in El Cerrito CA- Census tract 2010



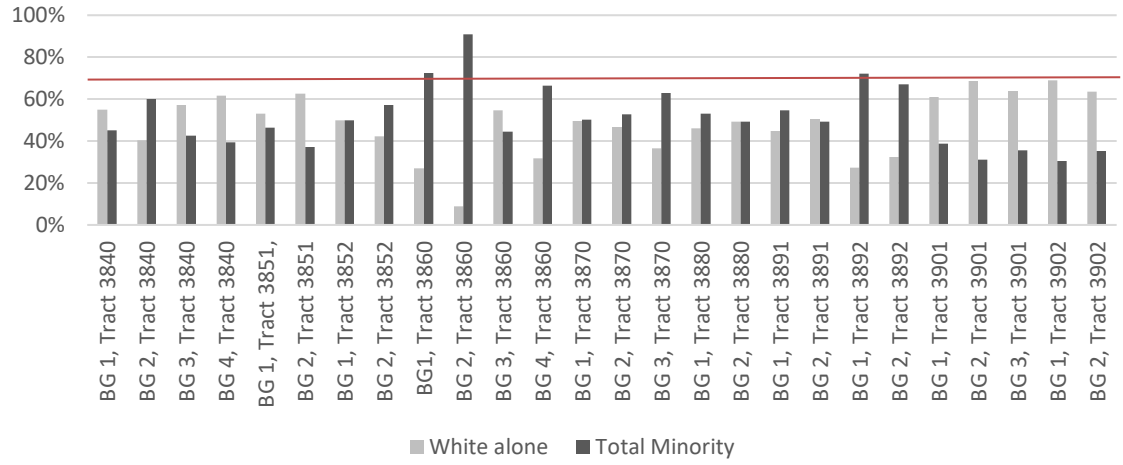
City wide comparison of the white population to the minority population in 2010. Social Explorer Tables (SE), Census 2010, Census Bureau; Social Explorer

Figure 4.3. Minority vs. non-minority population in El Cerrito CA - Block group 1990



City wide comparison of the white population to the minority population in 1990
Social Explorer Dataset (SE), Census 1990, Social Explorer; U.S. Census Bureau

Figure 4.4. Minority population vs. Non-minority population in El Cerrito CA - Block group 2010



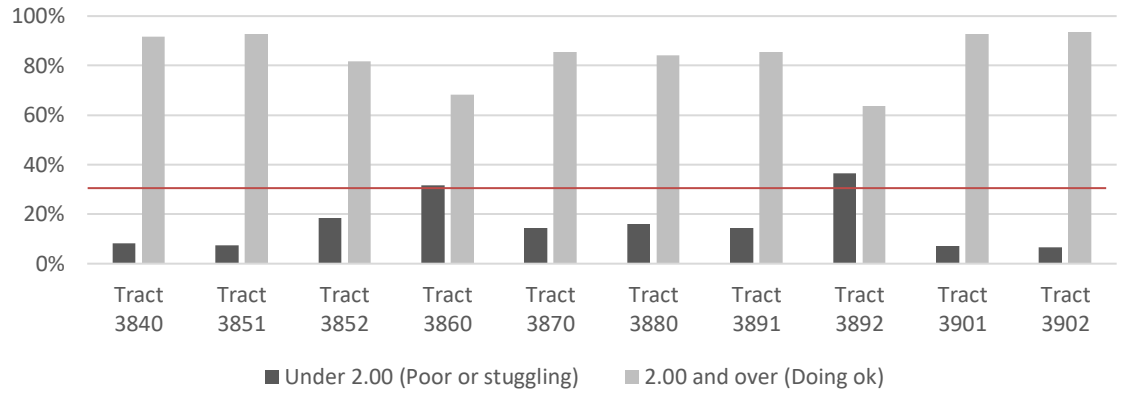
City wide comparison of the white population to the minority population in 2010
Social Explorer Tables (SE), Census 2010, Census Bureau; Social Explorer

Poverty Data Analysis

In addition to looking at the minority context of the census tracts and block groups the analysis also looked at the poverty status of both the census tracts and the block groups. Date from the 1990 survey shows that census tract 3860 and 3892 qualified

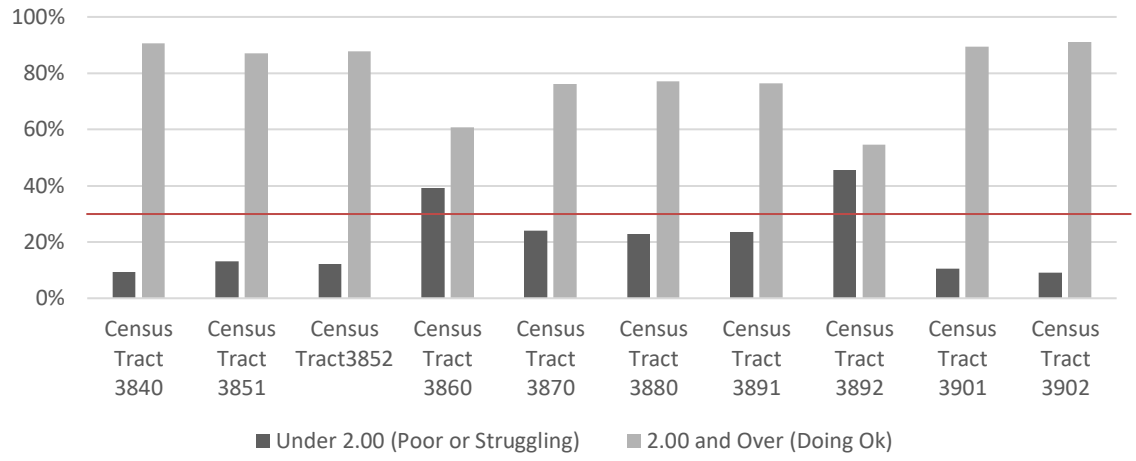
as a community of concern (Figure 4.5). Data from the 2010 survey shows that census tract 3860 and 3892 qualified as a community of concern (Figure 4.6). Further analysis of the block groups shows that in the 1990 survey block groups 5 in census tract 3860 was the only one to qualify as a community of concern (Figure 4.7). 2010 data shows that block group 1 and 2 in census tract 3860 and black groups 1 and 2 in census tract 3892 qualified as communities of concern (Figure 4.8).

Figure 4.5. Percent of people in poverty vs. people who are not in El Cerrito CA - Census tract 1990



City wide comparison of the population under 2.00 (poor or struggling) vs. population over 2.00 (doing ok) in 1990 Social Explorer Dataset (SE), Census 1990, Social Explorer; U.S. Census Bureau.

Figure 4.6. Percent of people in poverty vs. people who are not in El Cerrito CA - Census tract 2014



City wide comparison of the population under 2.00 (poor or struggling) vs. population over 2.00 (doing ok) in 1990 Social Explorer Dataset (SE), Census 1990, Social Explorer; U.S. Census Bureau

Figure 4.7. Percent of people in poverty vs. people who are not in El Cerrito CA - Block group 1990

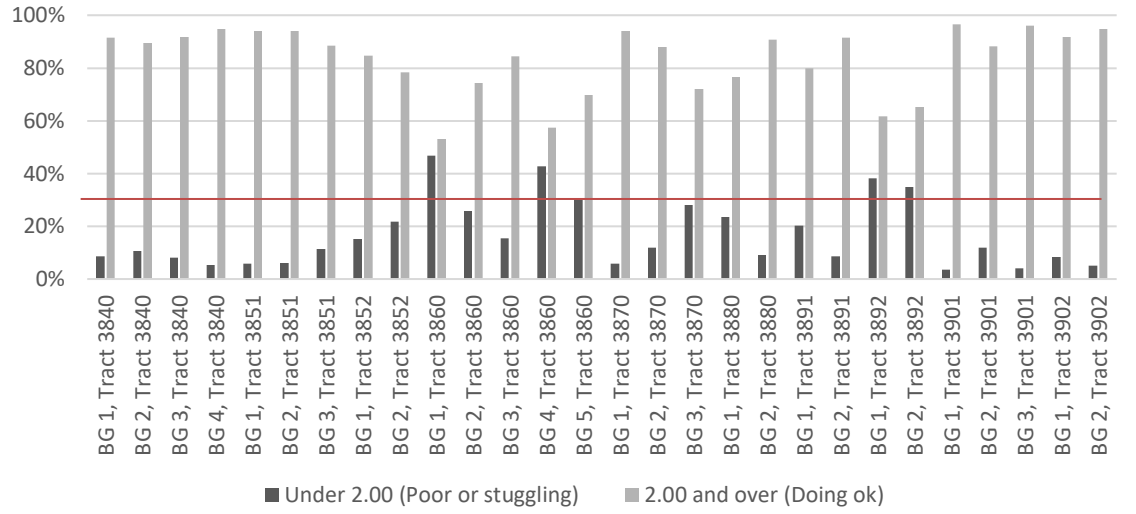


Chart 4.7. City wide comparison of the population under 2.00 (poor or struggling) vs. population over 2.00 (doing ok) in 1990. Social Explorer Dataset (SE), Census 1990, Social Explorer; U.S. Census Bureau

Figure 4.8. Percent of people in poverty vs. people who are not in El Cerrito CA -Block group 2014

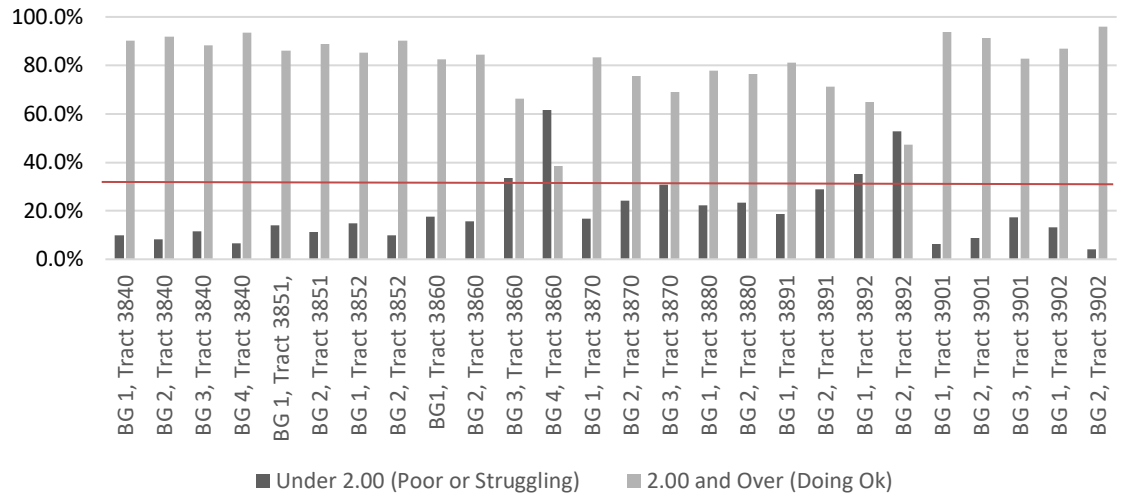


Chart 4.8. City wide comparison of the population under 2.00 (poor or struggling) vs. population over 2.00 (doing ok) in 2014. Social Explorer Tables: ACS 2014 (5-Year Estimates) (SE), ACS 2014 (5-Year Estimates), Social Explorer; U.S. Census Bureau

Comparison of Planned and Completed Daylighting Projects

The second step of the EJ analysis is to unpack the planned and completed projects in El Cerrito in relation to EJ communities of concern. Daylighting projects have been completed in El Cerrito as far back as 1996. At that time two projects had been completed the first was Baxter Creek in Poinsett Park which is located in census tract 3840 and block group 3. The second project completed in 1996 was the section of the Fluvius Innominatus in the Ohlone Greenway. The channel section flows from Portola street to Schmidt street and is located in census tract 3870 and block group 3. More recent projects include Cerrito Creek which was daylit in 2004 between Cornell and Kains Street near the south end of Cerrito Plaza in census tract 3891 and block group 2. The last project to date was completed in 2016 along with a portion of the Cerrito creek that flows past the new Highrise development in census tract 3892 in block group 2.

Among the completed projects El Cerritos Urban Greening Plan addresses planned opportunities for daylighting. The first planned project is the Fluvius

Innominatus, and although this section of the creek was daylit in 1996, the city plans to restore the existing creek channel along the Ohlone Greenway at Portola street to Schmidt street located in census tract 3870 and block group 3. The second planned project is located in Central Park and has been identified for potential daylighting. Central Park is located in census tract 3892 in block group 1. All other potential projects listed in the Urban Green Plan have been implemented.

In general, the analysis finds that for minority status four census tracts and eight block groups serve some communities of concern. While the analysis also finds that for poverty status four census tracts and five block groups serve communities of concern. The planned projects throughout El Cerrito can be found in census tracts 3840 block group 3, census tract 3870 block group 3, and census tract 3892 block group 2. The following chapter will discuss the findings of the analysis.

Chapter 5 Discussion

This chapter discusses the essential takeaways from the research. This chapter also summarizes the initial research question as it related to the literature review and the findings. This is followed by a summary of the methods and recommendations for more equitable planning and future topics that will need further research.

FINDING THE LINK BETWEEN DAYLIGHTING AND ENVIRONMENTAL JUSTICE REVIEW

The initial premise of this research is that it is important for cities to identify communities of concern or environmental justice issues when initiating green projects. The report demonstrates that traditional analytic approaches used for transport EJ analysis can also be effectively applied to other infrastructure projects like daylighting.

The results of this single city analysis reveals that daylighting is not overly problematic in terms of serving EJ communities. (at least for this one instance). Evaluation of the four census tracts that have completed daylighting projects using the MTC environmental justice metrics initially reveals only census tract 3892 as a community of concern (Table5.1) that has been proposed for a daylighting project in the Urban Greening Plan. Other census tracts that passed the evaluation with the MTC method was 3860 but this census tract does not have a completed or a planned daylighting project. However, upon a closer look at the block groups, data used to evaluate any communities of concern in 1990 found that zero block groups met either requirements. Only recent data from 2010 used to measure minority communities and 2014 data used to measure poverty percentage of recent daylighting projects, showed that block group 1 in census tract 3892 met one of the requirements to serve a community of concern.

Census data from block group 2 in census tract 3892 shows that at least 30% of the population was under 2.00 ratio of income to poverty level (Table 5-2). All other block groups in El Cerrito did not qualify as communities of concern that has a planned

daylighting project. The findings suggest that El Cerrito has daylit in the one census tract and/or block group that met the evaluation criteria for communities of concern for both factors. Through the review of planning documents, the current method of evaluation for siting green amenities was not discovered, and so it is unclear if El Cerrito's planning department uses an evaluation method that takes into consideration of socio-economic factors. With that said, the following recommendations and observations are made.

The CalTran's desk guide for identifying communities of concern which was modified slightly by the MTC provided a useful tool in identifying issues in the way green amenity projects are sited in the City of El Cerrito. Looking at both census tract and the block group level data allowed for a more in-depth evaluation of the environmental justice conditions in El Cerrito. The NEPA process evaluates and documents the possible relationship between infrastructure projects and environmental and socioeconomic and community conditions. NEPA also requires public involvement and community outreach accompany the documentation process (ICF Consulting, 2003). EJ analysis tools found in NEPA can be utilized by any city project to determine impacts of green amenities on the quality of the natural and human environment. Even though NEPA only requires federal agencies to engage in impact assessment, community entities such as CalTrans and MTC have proven that the EJ analysis process can be very useful. EJ analysis should be adopted and become the standard for evaluation of the socioeconomic impacts that may come from urban greening projects. Identifying communities of concern and environmental justice issues are only a small part of the issues surrounding green spaces in urban environments. Gentrification of areas after green amenities is an issue that has been identified as a significant issue (Angeulovski 2016). Further research needs to be conducted to determine if daylighting has the potential to gentrify an area further exacerbating the problem of low-income households or minority household's access to green space. Additional tools may need to be utilized to preserve the minority communities and green amenities cited with the community's proximity.

Table 5.1. Metropolitan Transportation Commission communities of concern metrics by Census Tract

	Census Tracts			
	3840	**3870**	**3891**	**3892**
30% in Poverty	NO	NO	NO	YES
70% Minority	NO	NO	NO	YES

This table summarizes the metrics used to identify environmental justice issues for the census tracts that had daylighting projects completed within it.

Table 5.2. Metropolitan Transportation Commission communities of concern metrics by Block Group

	Census Tracts with Block Group			
	3840, BG 3	**3870, BG 3**	**3891, BG 2**	**3892, BG 2**
30% in Poverty	NO	NO	NO	YES
70% Minority	NO	NO	NO	NO

This table summarizes the metrics used to identify environmental justice issues for the block group that had daylighting projects completed within it.

Chapter 6 Conclusion

As previously stated in earlier sections of this paper, as cities around the United States continues to invest in green infrastructure the siting of these green spaces will need to be inserted into minority communities. This research has identified that traditional NEPA environmental justice analysis tools can assist local location decision making for daylighting projects. In the case of El Cerrito only one community of concern exists in block group 1 of census tract 3892 and has been identified as an opportunity for daylighting. While census tract 3860 did meet one requirement for serving as a community of concern, a daylighting project was not been planned. The census tract should still continue to be evaluated using the MTC method for future opportunities for daylighting that do exist with in census tract 3860 along the Ohlone Greenway at Potreo Ave. Moving forward this research has shown the benefit of using CalTran's interpretation on NEPA federal requirements for identifying the relationship between environmental impacts of socioeconomic and community effects by looking at the minority communities and low-income communities.

I was able to discover that the majority of the green amenities were located in block groups that did not consist of both a minority population over 70% and an area where 30% or more of the community was reported to be in poverty (but one project did serve EJ communities). Through this discovery, I recommend that EJ analysis methods be used to identify environmental justice issues and communities of concern. As daylighting picks up in popularity in American cities, these projects should be included in low-income and minority communities. From census data, El Cerrito has a large population of minority community members, and the city has opportunities to daylight in areas where minorities and low-income populations live. Although current evaluation tools were not identified, city planners should consider adopting EJ analysis methods that allow urban greening efforts to be distributed equitably to ensure the benefits of urban green can be shared with all residents no matter their socioeconomic status.

Appendix A: Spatial reference maps

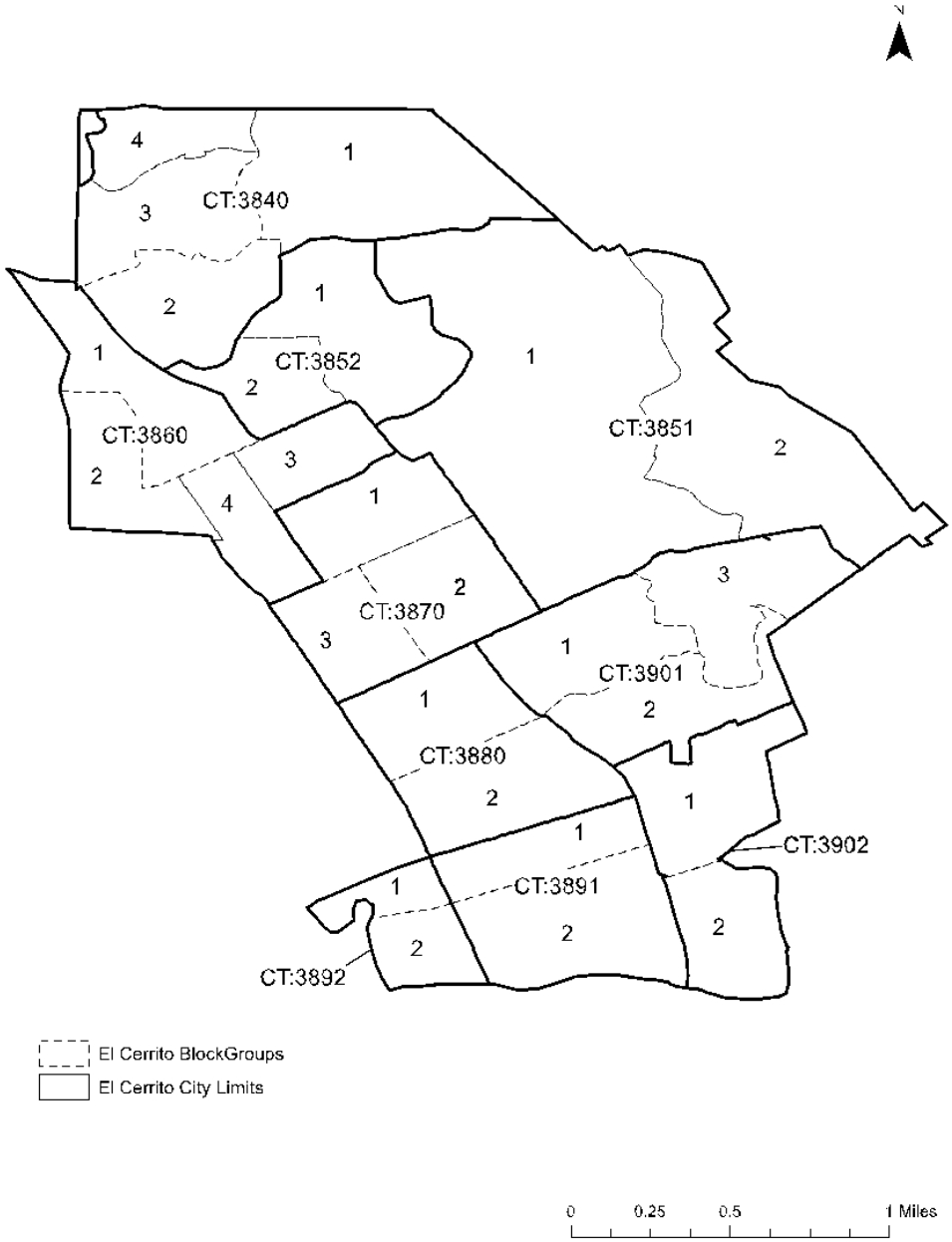


Figure A-1. Spatial analysis of poverty level in 1990 by block groups in El Cerrito, California.

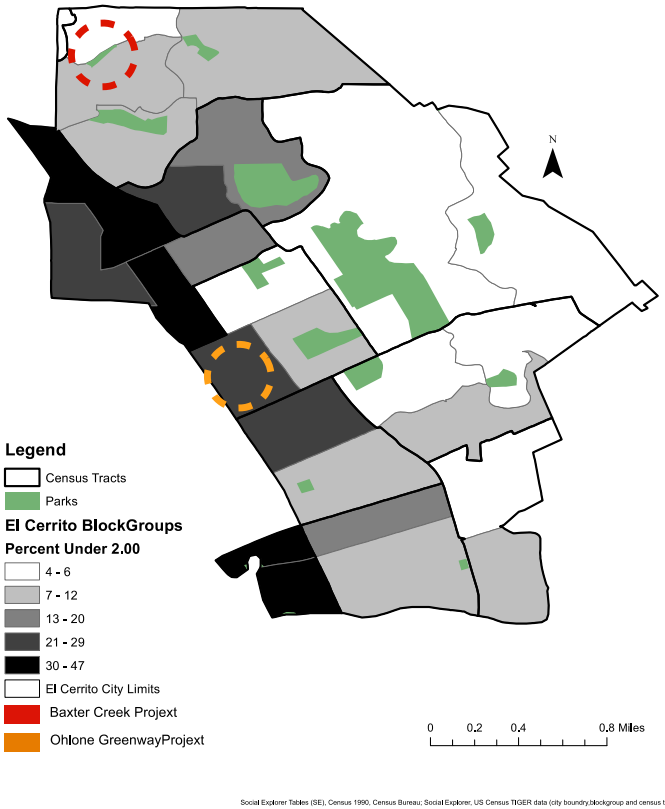


Figure A-2. Spatial analysis of poverty level in 1990 by Census tract in El Cerrito, California.

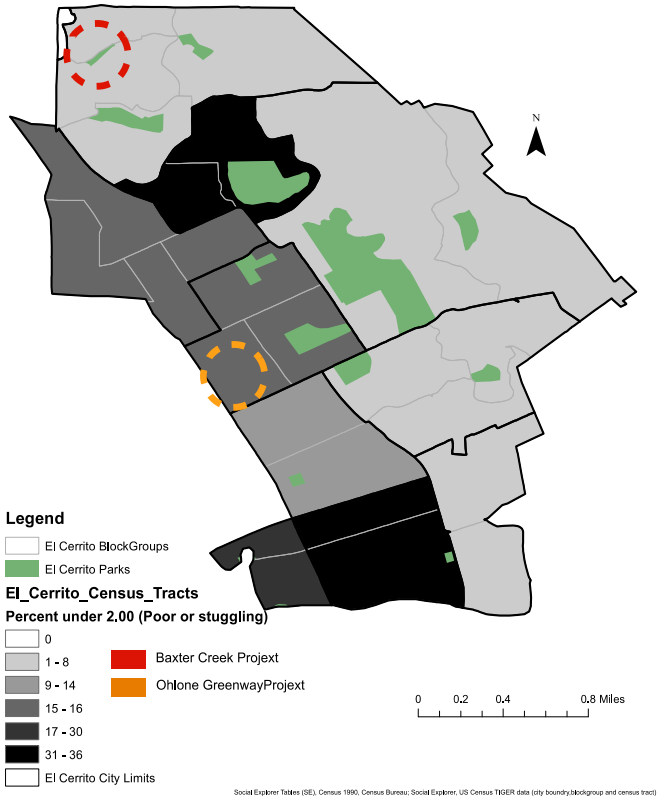


Figure A-3. Spatial analysis of minority distribution in 2010 in block groups in El Cerrito, California.

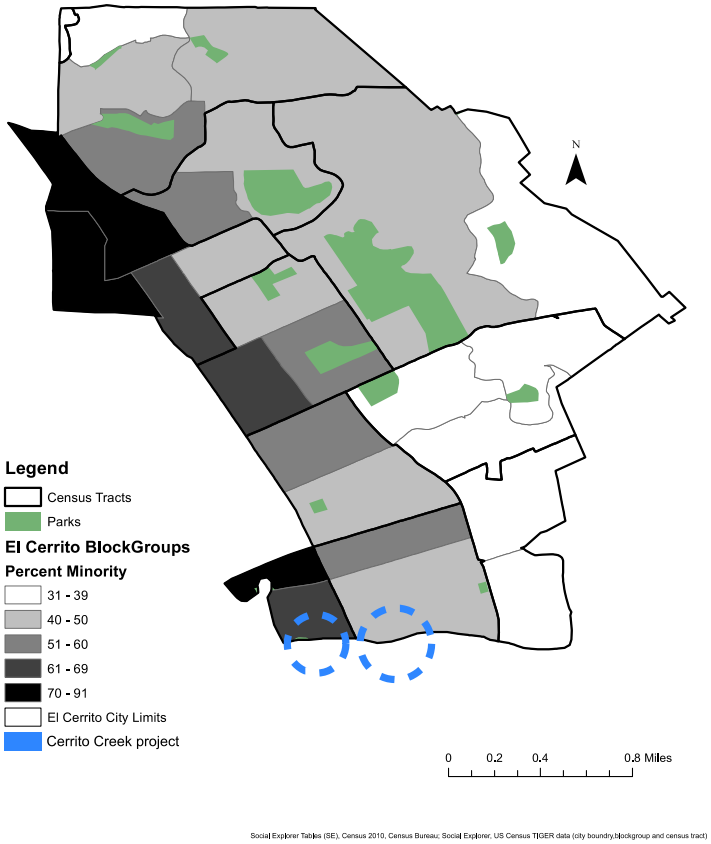


Figure A-4. Spatial analysis of minority distribution in 2010 in census tract in El Cerrito, California

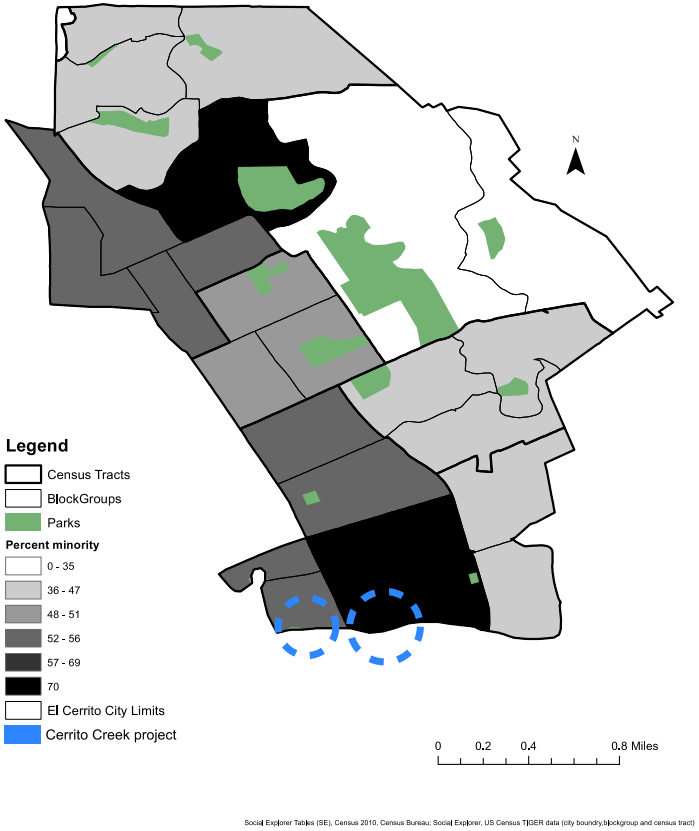


Figure A-5. Spatial analysis of distribution of poverty in 2014 by block group in El Cerrito, California.

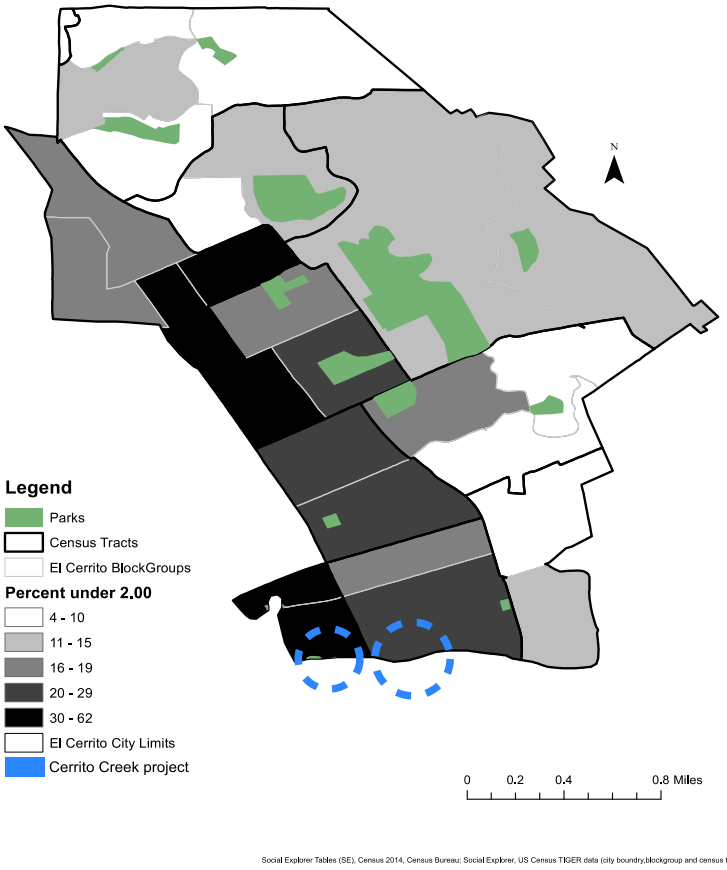


Figure A-6. Spatial analysis of distribution of poverty in 2014 by census tract in El Cerrito, California.

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